APPENDIX 5 – TMDLS

Cost Basis for TMDL Project Cost Estimates

Table 1 describes the cost basis used for estimating staff resource needs for TMDL development, Implementation Planning, and Basin Planning. The primary governing factor for the cost of a TMDL project is assumed to be the total extent of impairment. In general, the greater the extent of impairment addressed by a TMDL project (which may include multiple water bodies), the larger the watershed area that must be addressed. As the watershed area increases, there is generally a greater diversity of sources to consider, more government jurisdictions apply, and more stakeholder interests are potentially impacted. These factors generally mitigate many of the benefits from the "economy of scale" and lead to more complex, and therefore more resource intensive, technical and implementation planning work.

The tables in this appendix for "new" TMDL projects use the baseline costs identified in Table 1, adjusted by the sum of the applicable factors identified in Table 2. The projected timeline for completion of a "new" TMDL project, given all the resources identified, is three years for the TMDL Development phase and an additional year to bring a Basin Plan Amendment before the Regional Board.

As work begins on each TMDL Project, more refined estimates can be developed. Cost estimates for TMDL Projects that have started do not use Tables 1 and 2. Cost estimates for ongoing TMDL projects are based on staff knowledge of work accomplished to date and anticipated work to be accomplished.

Resources for implementation will not be estimated until the implementation planning has been completed. The level of staff involvement will vary tremendously depending on the degree to which resources from other agencies and interests are brought to bear on implementing the TMDL, as well as the implementation framework adopted by the Regional Board.

Contract work identified in Table 3 is based on current knowledge of information and data gaps. In general, the studies are needed to provide more site-specific information for specific TMDL projects. Some information gaps, such as the fish consumption survey, are critical regionwide needs. In most cases, the Regional Board staff could complete the TMDL Development phase, without full funding of the various contractual projects identified. Fully funding the contractual projects will lead to a stronger technical basis for the TMDL Projects and implementation program, and would likely lead to more timely implementation and attainment of water quality objectives.

A breakdown of staff (PY) needs by TMDL project for the four general categories of TMDL activities: 1) TMDL Development; 2) Implementation Planning; 3) Basin Plan Amendment; and 4) Implementation is shown on Table 4. For purposes of translating person-years (PY) into dollars, it is assumed that 1 PY equals $100,000. No distinction is made between State and Federal funding sources, but distinctions are made between TMDL projects and activities that will likely be funded with existing resources versus those for which new resources will be needed. It should be noted that of the PYs identified for TMDLs from State resources, a certain portion is dedicated to indirect costs (IDC). Of the 12 PY of State TMDL funds for the Central Valley Regional Board, 2.5 PY has been directed to IDC. The IDC is not incorporated into or distributed among the various TMDLs.

Table 1 - TMDL Project Cost Basis for Staff Resources (in PY)

	Extent of Impairment	TMDL Development	Implementation Planning	Basin Plan Amendment
Streams/Rivers	less than 10 miles	0.75	0.5	0.5
	between 10 and 100 miles	1.5	2.5	1.5
	greater than 100 miles	3	4	3
Lakes	less than 10000 acres	0.75	0.5	0.5
	greater than 10000 acres	1.5	2.5	1.5

Table 2 - Adjustment Factors Applied to Cost Estimates

Adjustment Factor	TMDL Development	Implementation Planning	Basin Plan Amendment
Numeric WQO has not been adopted	25%	0%	25%
TMDL for pollutant has been adopted in another setting	-25%	-25%	-25%
Limited or no source data	50%	100%	25%
TMDL for pollutant has not been adopted in another setting	50%	100%	50%
Implementation Plan in place or developed by outside group	0%	-50%	-50%
Single source of pollutant	-25%	-50%	-50%
TMDL for another pollutant has been adopted in same water body	-25%	0%	0%
Limited or no data on management practices/technology	0%	100%	50%

Table 3 – TMDL Contract Needs by Project

Table 3 - TMDL Contract Needs by Project

TMDL Project	FY 01/02	FY 02/03	FY 03/04	Justification
Clear Lake Hg Model	$100,000	$100,000		Refine initial BAF-based model to include fate and transport from tributaries and Sulfur Bank Mine.
Clear Lake Hg - Follow-up Monitoring		$30,000	$30,000	
Central Valley Hg Impacts on Wildlife	$350,000	$350,000	$350,000	Studies are needed to determine the actual impacts of elevated mercury levels on fish-eating birds and mammals in the Central Valley. Studies would be conducted in potential impacted areas in the Sac River and San Joaquin River watersheds, as well as the Delta.
OP source monitoring in the Sacramento River	$500,000	$500,000	$500,000	Further source analysis is needed to quantify both event-based and irrigation season loadings. Stream-flow measurements in addition to GC/MS analysis are needed.
TMDL Facilitator/stakeholder coordinator (region-wide)	$200,000	$200,000	$200,000	Recent legislation requires advisory committees for each TMDL. Neutral facilitators & note takers are needed. Estimated cost $50,000/group/year. May require additional funds if funds for existing groups become unavailable.
Development and evaluation of OP control measures (SR, SJR, Delta)	$500,000	$500,000	$500,000	OP source control measures for dormant orchard spray are being evaluated. Additional studies for other crops and times of year are needed. Studies would define loading rates after application of various management practices.
OP source monitoring in the Delta	$500,000	$500,000		Within Delta sources of O Ps have not been well quantified. Source assessment during storm events and the irrigation season are needed.
OP source monitoring in the San Joaquin River	$800,000	$250,000	$250,000	Additional storm event and irrigation season monitoring of OP sources is needed. Both flow measurements as well as GC/MS analysis will be conducted.
Evaluate sources and sinks of methyl Hg in the Delta	$300,000	$500,000		This study will supplement current CALFED funded research. Spatial variation of mercury accumulation has been assessed. These funds will help determine the characteristics of methyl Hg sources and sinks within the Delta.
OP source monitoring in east-side SJR tributaries	$500,000	$500,000	$500,000	General loading information from SJR tributaries will be available, but TMDLs for the east-side tributaries are required. This will require refined source assessment information for each east-side tributary watershed.
Source identification of OPs in urban creeks.	$200,000	$200,000	$200,000	OP levels within urban creeks are generally known, but specific sources have not been identified. Land use specific investigations as well as air sources will need to be evaluated to determine relative loadings.
OP beneficial use assessment in urban creeks.	$100,000	$100,000		Beneficial uses in urban creeks have not been well characterized. Bioassessments as well as other tools will be applied to determine the specific beneficial uses for urban creeks without specific BU designations.
OP source monitoring in SJR west-side tributaries.	$200,000	$200,000	$200,000	A number of west-side SJR tributaries are listed. Further spatial (by land use) and temporal characterization of OP loading is needed to determine primary sources of OP s.
Hg fate, transport, & bioaccumulation model for the Delta	$400,000	$1,000,000	$1,000,000	The CALFED Hg Science review panel noted that modeling was a primary (yet unfunded) need for the CALFED Hg research. Sufficient data should exist (by 12/01) to develop a simple empirical model of Hg fate, transport and uptake. Years 2 & 3 would include further refinement & development of a mechanistic model. This model will relate source reduction and bioaccumulation.

Table 3 – TMDL Contract Needs by Project

Table 3 - TMDL Contract Needs by Project

TMDL Project	FY 01/02	FY 02/03	FY 03/04	Justification
Salt/Boron in SJR data compilation	$50,000	$50,000	$50,000	A large amount of salinity and boron data is being collected to support the development of a salinity control program in the San Joaquin River watershed. The funds would provide the necessary student assistance to collect and compile that data.
Salt/Boron in SJR control measure evaluation	$200,000	$200,000	$200,000	Various management practices are being employed to control salt and boron discharges to the SJR. These practices (both agricultural & wetland) will be evaluated to determine their long-term effectiveness.
Salt/Boron in SJR TMDL refinement monitoring.	$500,000	$250,000		Additional monitoring of salt/boron sources will be conducted in order to refine the initial TMDL for salt/boron.
Salt/Boron in SJR compliance monitoring.	$250,000	$250,000	$250,000	The establishment of the salt/boron TMDL will require the establishment of real-time flow and water quality stations at key compliance points in the SJR. The cost of each station will be approx. $50,000/station/year.
Salt/Boron in SJR Real-time management infrastructure development	$500,000	$1,500,000	$1,500,000	Real-time management of salt loads to the SJR will require a number of infrastructure changes. Projects will include drainage control structures, storage/recirculation systems, changes in tile drainage systems, and changes in wetland storage & drainage.
Se in SJR control measure evaluation	$200,000			A number of Se control measures have been developed. This study would evaluate the relative effectiveness of those various measures.
Se in SJR data compilation	$10,000	$10,000	$10,000	An extensive amount of selenium data is being collected to determine compliance with the selenium TMDL. Ongoing assistance is needed to compile and assess that data.
DO in SJR model refinement	$450,000	$200,000		A rough-cut model for DO in the SJR river has been developed. Further model refinements are necessary to determine which variables and inputs are primarily responsible for DO sags; includes evaluation of travel times and ship channel residence time using dye studies.
DO in SJR source monitoring	$700,000	$150,000		Little data exists for non-point sources of BOD load in the San Joaquin River watershed. Natural & agricultural sources of BOD load will be evaluated to determine relative contributions; includes assessment of SOD in ship channel
DO in SJR support of stakeholder technical review	$50,000	$50,000	$50,000	These funds would allow stakeholders with limited resources to tap technical expertise for review of the DO TMDL. (The level is similar to the South SF Bay TMDL).
DO in SJR control measure development	$400,000	$350,000		These funds would support the development and evaluation of BOD loading control measures from various agricultural and urban land uses.
DO in SJR implementation plan development.	$250,000	$350,000		Improvement of DO levels in the SJR can be accomplished through combinations of changes in BOD loading, channel morphology, and flow. Alternatives for an implementation framework and evaluation of cost effective solutions will be completed.
DO in SJR compliance monitoring	$300,000	$200,000	$200,000	Install, maintain and evaluate data from permanent oxygen meters to assess compliance with basin plan objective; conduct monitoring for nutrients and other oxygen demanding substances
GIS-based OP fate & transport model for the Sac River	$100,000	$300,000	$200,000	The model will initially provide a simplified framework for describing OP fate and transport. Model refinement in years 2 & 3 will include a component linked to GIS data layers to allow evaluation of cumulative effect of changes in management practices on downstream concentrations.
GIS-based OP fate & transport model for the SJR	$100,000	$300,000	$200,000	The model will initially provide a simplified framework for describing OP fate and transport. Model refinement in years 2 & 3 will include a component linked to GIS data layers to allow evaluation of cumulative effect of changes in management practices on downstream concentrations.

Table 3 – TMDL Contract Needs by Project

Table 3 - TMDL Contract Needs by Project

TMDL Project	FY 01/02	FY 02/03	FY 03/04	Justification
GIS-based OP fate & transport model for the Delta	$200,000	$600,000	$400,000	Similar to SJR and Sac River model but will be linked to Delta flow models (DSM2) to accurately capture diversions and tidal effects.
Hg & OC Pesticide Fish Advisory Review	$100,000	$250,000	$250,000	Based on existing data and information gathered through additional fish body burden studies, the appropriate state agency would review existing fish tissue data to validate/revise current advisories or issue new advisories.
Feasibility studies of methyl Hg control in Delta	$200,000	$200,000	$200,000	Feasibility studies of methyl-Hg control in Delta would be conducted in two different settings (e.g. wetland/ag drains) in year 1. Additional site-specific feasibility studies would be conducted in years 2 & 3.
Feasibility studies of Hg control in Delta tribs.	$300,000	$500,000	$500,000	Feasibility studies of Hg control in Delta tributaries would be conducted in three different settings (Hg mine/gold mine/stream bed sediment). Additional site-specific feasibility studies would be conducted in years 2 & 3.
Central Valley Human Fish Consumption Survey	$1,000,000	$1,000,000		Needed as the basis of fish tissue target development for bioaccumulative pollutants.
Central Valley Fish Body Burden Study	$500,000	$1,000,000	$1,000,000	Species-specific data is needed for mercury and OC pesticide levels in fish to assess risk to humans based on consumption survey.
New Idria Mine Clean-up Feasibility Study	$100,000			New Idria is a potential ongoing source of mercury to the SJR watershed. FS would address options for reducing off-site migration of mercury.
Delta Tributaries Hg Source Analysis	$350,000	$1,500,000	$1,500,000	Mercury appears to be elevated Valley-wide. Initial screening survey followed by more intensive source analysis would be conducted. Invertebrates & other biota would be sampled.
Cache Creek Settling Basin Clean-up: Feasibility Study & Demonstration	$100,000	$200,000	$200,000	Settling Basin could trap mercury laden sediment prior to entry into the Yolo Bypass. Initial feasibility study followed by demonstration is needed.
Reservoir Hg Source Analysis		$1,000,000	$1,000,000	The additional fish body burden information will likely identify additional reservoirs with elevated Hg levels. Additional source analysis will be required. Invertebrates & other biota would be sampled as appropriate.
Urban Creek OP Fate & Transport Model	$100,000	$200,000		Model would be linked to land use & other controlling variables. The model would include an aerial deposition component to account for drift from ag sources.
Quantification of NPDES sources of mercury	$75,000	$300,000		Ultra-clean sampling techniques are needed to analyze methyl and inorganic mercury from NPDES permitted sources.
SJR OC Pesticide Fate, Transport, & Bioaccumulation Model	$150,000	$200,000		A simple model to describe OC pesticide fate, transport, and bioaccumulation in the SJR watershed will be developed. The goal will be to identify primary sources and likely transport and accumulation mechanisms.
Pit River Nutrient Model	$50,000	$200,000	$200,000	An initial "rough cut" nutrient model will be developed for the Pit River to identify primary sub watershed sources. Further refinements will be made to account for nutrient transformation and land-use specific loading.
Fall River Sediment Model	$50,000	$200,000	$200,000	An initial "rough cut" sediment model will be developed for the Fall River to identify primary sub watershed sources. Further refinements will be made to account for effects of mass wasting, riparian vegetation, roads, and timber harvesting.
Total	$11,985,000	$16,440,000	$11,840,000	

Table 4 – TMDL PY Needs by Project

Table 4 - TMDL PY Needs by Project			FY01/02			FY02/03			FY03/04			FY04/05		
Water body	**Stressor**	**TMDL Activity**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**
Clear Lake	Hg	Development	$15,000	$0		$0	$0		$0	$0		$0	$0	$0
		Impl Planning	$0	$25,000		$0	$0		$0	$0		$0	$0	$0
		BPA	$0	$15,000		$0	$50,000		$0	$0		$0	$0	$0
		Implementation	$0	$0		$25,000	$0		$25,000	$0		$25,000	$0	$0
Cache Creek	Hg	Development	$0	$75,000		$30,000	$0		$0	$0		$0	$0	$0
		Impl Planning	$0	$25,000		$0	$50,000		$0	$50,000		$0	$0	$0
		BPA	$0	$0		$0	$25,000		$50,000	$50,000		$0	$25,000	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$100,000	$0
Delta	Hg	Development	$0	$100,000		$0	$50,000		$50,000	$0		$0	$0	$0
		Impl Planning	$0	$50,000		$0	$100,000		$0	$100,000		$0	$0	$0
		BPA	$0	$0		$50,000	$50,000		$100,000	$100,000		$50,000	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$150,000	$0
San Joaquin River	Hg	Development	$0	$0		$75,000	$50,000		$75,000	$50,000		$75,000	$50,000	$0
		Impl Planning	$0	$0		$125,000	$50,000		$100,000	$75,000		$100,000	$75,000	$0
		BPA	$0	$0		$0	$0		$0	$0		$125,000	$62,500	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Cosumnes	Hg	Development	$0	$0		$75,000	$0		$75,000	$0		$75,000	$0	$0
		Impl Planning	$0	$0		$109,375	$0		$109,375	$0		$109,375	$0	$0
		BPA	$0	$0		$0	$0		$0	$0		$93,750	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Lake Berryessa	Hg	Development	$0	$0		$75,000	$0		$75,000	$0		$75,000	$0	$0
		Impl Planning	$0	$0		$109,375	$0		$109,375	$0		$109,375	$0	$0
		BPA	$0	$0		$0	$0		$0	$0		$93,750	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Panoche Creek	Hg	Development	$0	$37,500		$0	$37,500		$0	$37,500		$0	$0	$0
		Impl Planning	$0	$15,625		$0	$15,625		$0	$15,625		$0	$15,625	$0
		BPA	$0	$0		$0	$0		$0	$18,750		$0	$18,750	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Harley Gulch	Hg	Development	$0	$40,000		$0	$37,500		$0	$37,500		$0	$37,500	$0
Sulfur Creek		Impl Planning	$0	$0		$0	$15,625		$0	$15,625		$0	$15,625	$0
		BPA	$0	$0		$0	$0		$0	$0		$0	$18,750	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Sacramento River	Hg	Development	$0	$80,000		$0	$48,333		$0	$48,333		$0	$48,333	$0
		Impl Planning	$0	$0		$0	$50,000		$25,000	$50,000		$0	$75,000	$0
		BPA	$0	$0		$0	$0		$0	$0		$50,000	$100,000	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0

Table 4 – TMDL PY Needs by Project

Table 4 - TMDL PY Needs by Project			FY01/02			FY02/03			FY03/04			FY04/05		
Water body	**Stressor**	**TMDL Activity**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**
Marsh Creek	Hg	Development	$37,500	$0		$37,500	$0		$37,500	$0		$0	$0	$0
Marsh Creek Reservoir		Impl Planning	$15,625	$0		$15,625	$0		$15,625	$0		$15,625	$0	$0
		BPA	$0	$0		$0	$0		$18,750	$0		$18,750	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Lower American River	Hg	Development	$75,000	$0		$75,000	$0		$75,000	$0		$0	$0	$0
		Impl Planning	$109,375	$0		$109,375	$0		$109,375	$0		$109,375	$0	$0
		BPA	$0	$0		$0	$0		$93,750	$0		$93,750	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Little Grizzly Creek	Copper	Development	$0	$25,000		$0	$25,000		$0	$25,000		$0	$0	$0
Dolly Creek	Zinc	Impl Planning	$0	$15,625		$0	$15,625		$0	$15,625		$0	$15,625	$0
		BPA	$0	$0		$0	$0		$0	$18,750		$0	$18,750	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Sacramento River	Copper	Development	$0	$0		$0	$0		$0	$0		$0	$0	$0
	Cadmium	Impl Planning	$0	$0		$0	$0		$0	$0		$0	$0	$0
	Zinc	BPA	$50,000	$0		$0	$0		$0	$0		$0	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Sacramento River	Diazinon	Development	$50,000	$50,000		$30,000	$0		$0	$0		$0	$0	$0
Feather River		Impl Planning	$25,000	$25,000		$0	$25,000		$0	$0		$0	$0	$0
		BPA	$0	$25,000		$0	$75,000		$0	$50,000		$0	$0	$0
		Implementation	$0	$0		$0	$0		$100,000	$100,000		$100,000	$100,000	$0
San Joaquin River	Diazinon	Development	$0	$100,000		$0	$40,000		$0	$0		$0	$0	$0
	Chlorpyrifos	Impl Planning	$0	$100,000		$0	$50,000		$0	$0		$0	$0	$0
		BPA	$0	$50,000		$0	$100,000		$0	$50,000		$0	$0	$0
		Implementation	$0	$0		$0	$0		$100,000	$100,000		$100,000	$100,000	$0
Delta	Diazinon	Development	$0	$100,000		$25,000	$75,000		$0	$50,000		$0	$0	$0
	Chlorpyrifos	Impl Planning	$0	$50,000		$25,000	$75,000		$0	$50,000		$0	$0	$0
		BPA	$0	$0		$0	$50,000		$50,000	$100,000		$0	$50,000	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$150,000	$0
Merced River	Diazinon	Development	$0	$80,000		$0	$73,333		$0	$73,333		$73,333	$0	$0
Tuolumne River	Chlorpyrifos	Impl Planning	$0	$0		$50,000	$25,000		$0	$75,000		$25,000	$50,000	$0
Stanislaus River		BPA	$0	$0		$0	$0		$0	$0		$50,000	$100,000	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Orestimba Creek	Diazinon	Development	$50,000	$0		$50,000	$0		$50,000	$0		$0	$0	$0
	Chlorpyrifos	Impl Planning	$46,875	$0		$46,875	$0		$46,875	$0		$46,875	$0	$0
		BPA	$0	$0		$0	$0		$75,000	$0		$75,000	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0

Table 4 – TMDL PY Needs by Project

Table 4 - TMDL PY Needs by Project			FY01/02			FY02/03			FY03/04			FY04/05		
Water body	**Stressor**	**TMDL Activity**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**
Arcade Creek	Diazinon	Development	$0	$50,000		$0	$25,000		$0	$0		$0	$0	$0
	Chlorpyrifos	Impl Planning	$0	$50,000		$0	$25,000		$0	$0		$0	$0	$0
		BPA	$0	$25,000		$25,000	$50,000		$0	$25,000		$0	$0	$0
		Implementation	$0	$0		$25,000	$0		$25,000	$0		$25,000	$0	$0
Urban Creeks	Diazinon	Development	$75,000	$0		$75,000	$0		$75,000	$0		$0	$0	$0
	Chlorpyrifos	Impl Planning	$109,375	$0		$109,375	$0		$109,375	$0		$109,375	$0	$0
		BPA	$0	$0		$0	$0		$93,750	$0		$93,750	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Delta	DO	Development	$0	$50,000		$0	$50,000		$0	$25,000		$0	$0	$0
		Impl Planning	$0	$100,000		$50,000	$50,000		$0	$100,000		$0	$0	$0
		BPA	$0	$0		$0	$50,000		$75,000	$75,000		$50,000	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$200,000	$0
San Joaquin River	Selenium	Development	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Impl Planning	$50,000	$0	$0	$0	$0	$50,000	$0	$0	$0	$0	$0	$0
		BPA	$50,000	$0	$0	$0	$0	$50,000	$0	$0	$0	$0	$0	$0
		Implementation	$75,000	$0	$0	$75,000	$0	$75,000	$0	$0	$0	$0	$0	$0
San Joaquin River	Salt	Development	$0	$25,000		$0	$25,000		$0	$0		$0	$0	$0
	Boron	Impl Planning	$25,000	$0		$0	$0		$0	$0		$0	$0	$0
		BPA	$0	$50,000		$100,000	$50,000		$0	$50,000		$0	$0	$0
		Implementation	$200,000	$0		$100,000	$0		$0	$0		$0	$0	$0
San Joaquin River	Organo-chlorine Pesticides	Development	$0	$40,000		$136,667	$50,000		$111,667	$75,000		$111,667	$75,000	$0
		Impl Planning	$0	$0		$125,000	$50,000		$100,000	$75,000		$100,000	$75,000	$0
		BPA	$0	$0		$0	$0		$0	$0		$250,000	$50,000	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Merced River	Organo-chlorine Pesticides	Development	$100,000	$0		$125,000	$0		$125,000	$0		$0	$0	$0
Tuolumne River		Impl Planning	$75,000	$0		$75,000	$0		$75,000	$0		$75,000	$0	$0
Stanislaus River		BPA	$0	$0		$0	$0		$150,000	$0		$150,000	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Pit River	Nutrients	Development	$175,000	$0		$125,000	$0		$125,000	$0		$0	$0	$0
		Impl Planning	$200,000	$0		$200,000	$0		$200,000	$0		$200,000	$0	$0
		BPA	$0	$0		$0	$0		$262,500	$0		$262,500	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0
Fall River	Sediment	Development	$87,500	$0		$87,500	$0		$87,500	$0		$0	$0	$0
		Impl Planning	$125,000	$0		$125,000	$0		$125,000	$0		$125,000	$0	$0
		BPA	$0	$0		$0	$0		$262,500	$0		$262,500	$0	$0
		Implementation	$0	$0		$0	$0		$0	$0		$0	$0	$0

Table 4 – TMDL PY Needs by Project

Table 4 - TMDL PY Needs by Project			FY01/02			FY02/03			FY03/04			FY04/05		
Water body	**Stressor**	**TMDL Activity**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**	**New PY**	**Existing PY**	**Total**
All	All	303(d) List	$0	$75,000		$0	$0		$0	$0		$0	$75,000	$0
Sub-Total		Development	$665,000	$852,500	$0	$1,021,667	$586,666	$0	$961,667	$421,666	$0	$410,000	$210,833	$0
		Impl Planning	$781,250	$456,250	$0	$1,275,000	$596,875	$50,000	$1,125,000	$621,875	$0	$1,125,000	$321,875	$0
		BPA	$100,000	$165,000	$0	$175,000	$500,000	$50,000	$1,231,250	$537,500	$0	$1,718,750	$443,750	$0
		Implementation	$275,000	$0	$0	$225,000	$0	$75,000	$250,000	$200,000	$0	$250,000	$800,000	$0
		Sub-Total	$1,821,250	$1,548,750	$0	$2,696,667	$1,683,541	$175,000	$3,567,917	$1,781,041	$0	$3,503,750	$1,851,458	$0
		Indirect Cost % of Total Cost	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	$0
Total (Sub-Total+IDC)		Development	$831,250	$1,065,625	$0	$1,277,084	$733,333	$0	$1,202,084	$527,083	$0	$512,500	$263,541	$0
		Impl Planning	$976,563	$570,313	$0	$1,593,750	$746,094	$62,500	$1,406,250	$777,344	$0	$1,406,250	$402,344	$0
		BPA	$125,000	$206,250	$0	$218,750	$625,000	$62,500	$1,539,063	$671,875	$0	$2,148,438	$554,688	$0
		Implementation	$343,750	$0	$0	$281,250	$0	$93,750	$312,500	$250,000	$0	$312,500	$1,000,000	$0
		Grand-Total	$2,276,563	$1,842,188	$0	$3,370,834	$2,104,426	$218,750	$4,459,896	$2,226,301	$0	$4,379,688	$2,220,573	$0